

Geography Coursework

Contents

Introduction

-Aim

Shopping hierarchy exists in urban centers. The aim of this report is to find out in which ways do shopping centers vary as their size increase (determined by the number of shops and space occupied). Research was carried out in Nei-Hu District, Taipei, Taiwan. The results may differ from European countries. The following were investigated:

- Shop types
- Building height
- Traffic and pedestrian flow
- Environmental quality-litter
- Environmental quality-noise
- Amenities
- Shopping patterns:
 - Sphere of influence
 - Frequency of visit
 - Money spent
 - Transportation method
 - Purpose of visiting
 - Time spent

Besides investigating different sizes, 2 large centers were investigated. One was the local high street and another an out-of-town shopping center. The purpose was to find the difference between them.

-The area and centers (see map for location of centers)

Nei-Hu district is a mix of residential and business area. Taipei is a fairly new city, it may not have developed characteristics of older cities. It is located outer area of Taipei City. Thus, most people live here to commute to work. The district can be divided into 3 types of land uses:

[map]

The results from different centers vary because of its location. Two corner shops were investigated because there may not be enough respondents to show the characteristics of small centers.

Centers were as follows:

C1-main high street of the district

C2-out of town shopping center

C3-local high street

C4-small center in residential area.

C5-cluster of shops near high way.

C6.1-corner shop

C6.2-corner shop near commuting zone.

At C1-C5, sample points were chosen to represent the area for certain data. See map for sample points.

-Methodology

At larger centers, it is difficult to collect data at every point, so sample points were chosen to represent the area. The larger the center, the more sample points were placed. This is because data may change in different parts of a large center. The points were random, but were equally spaced.

- Shop Types

This was done because as centers increase in size, the type of shops it provides will change. The time of investigation is not important, because the shops are not likely to change. Although one problem is that it was difficult to determine the shop type when it is dark and when shops are closed. To avoid this, this data was collected during the day at working hours.

One difficulty was investigating shops in C2. because there were only 3 superstores, the percentage of different goods sold was calculated by counting how much space each type occupies (this was in rows). This may be inaccurate as some goods occupy more space.

Shops were categorized into the following:

- Comparison Shops [CM]

Shops selling up market goods, which are high priced. E.g. clothes, CDs, electronics...etc.

- Convenience Shops [CON]

Shops selling low order goods, which are low priced and bought frequently. These include food, stationary, daily goods (tissue, soap, snack..etc).

- Restaurant [RES]

Shops that provide cooked food (meals) to eat in. this can be both convenience and comparison depending on the nature of the shop and where it is located.

- Snacks [SN]

These are shops providing mostly deserts (traditional Taiwanese ones), e.g drinks. These are often stands and are very cheap and should be a convenience shop.

- Service [SER]

Where consumers pay for services, not physical goods. These include doctors, lawyers, hairdressers', beauty parlors...etc.

-Financial [F]

These many are banks.

-Entertainment [EN]

This category of shops is distinct in centers in Taipei. These include comic/video rental shops (also selling), cinemas and Internet cafes.

-Educational [LEARN]

These are classes Taiwanese students attend after school or on weekends. They include academics, music and sports. These are places where people learn something.

-Specialist [SP]

Shops that specialize in one type of product only, e.g antique, bags, kitchen ware shops...etc.

-Department [DEP]

Shops that provide a wide range of goods. These often consists of many floors, each selling one type of product. These shops would often include many of the goods/service above.

- Building height

This was collected by counting how many floors each building has in a center. Ground floors are counted as a floor. This data will be presented as iso lines to show how buildings heights vary with size of centers; it will also show how it varies within larger centers. One problem with this data is that it doesn't represent the size of the building. For example, at C2, the buildings are large but not tall.

- Traffic and Pedestrian Flow (number/minute)

This will show us how busy a center is. This data will change according to the time. The solution was to collect all data at the same time on weekdays. It was expected that traffic and pedestrian flow would not differ too much between weekdays. All data was collected twice at 11:00 a.m., the average was used to analyze. Another problem was in larger centers data was collected at sample points. Ideally it should be collected at the same time. To obtain a more accurate result, I collected the data at one point and then quickly rushed to the next point. The order was reversed on the second time and average used.

- Environmental quality-litter

Bi-polar analysis was used. Points were given according to the type, size and amount of litter seen within 3 meter radius of sample points. Of sample points were located at crossroads, the data was then collected at 4 points within the

sample point, the results were added up to give the points for that sample point. Litter were categorized and points given as follow

-Paper and card board pieces (point/unit)

One unit was defined as a piece about the size of an adult's hand.

-Drink cans (point/unit)

These include aluminum cans, plastic cans and general drink cans. A 1.5 liter bottle would have been counted as 2 units.

-Plastic pieces (point/unit)

Definition same as paper.

-Polystyrene pieces (point/unit)

It was important to have this category because many restaurants use polystyrene, and because restaurants are very common in Taiwan. Definition same as above.

-Small pieces of litter (point/10units)

These are little pieces of litter, e.g. cigarette butts and any of the above at sizes 5-10cm.

Time may also affect the results, so this was collected at 2-3pm weekdays. It was not repeated because time should not affect the results significantly. Sample points were used.

- Environmental quality-noise

Bi-polar analysis was used. The data was collected at 10 am and 4pm weekdays at sample points. The average was used; noise may be affected by time. I listened to the noise for 1 minute and gave a value. They were as follows:

- 1- Small enough to ignore, e.g people walking, chat, cats and dogs.
- 2- Scooter, bikes, car driving by slowly.
- 3- Average-acceptable
- 4- Large amounts of vehicles (trucks, cars, scooter)
- 5- Very loud, construction site noise, traffic honking and airplanes

- Amenities

These included:

- bins
- public telephones
- post boxes
- public chairs

Amenities are not affected by time, so the data was collected during weekends.

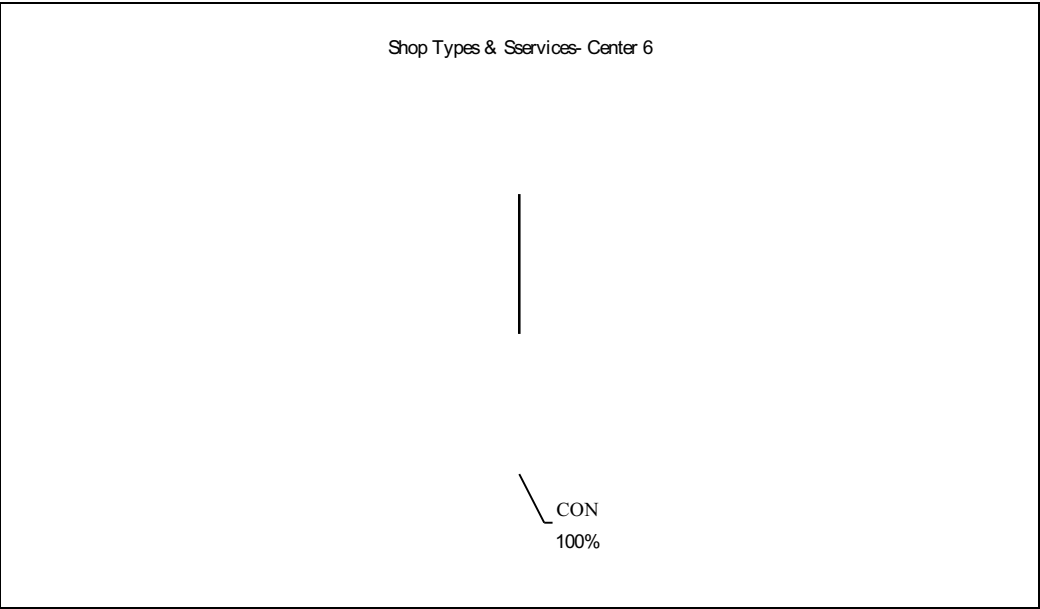
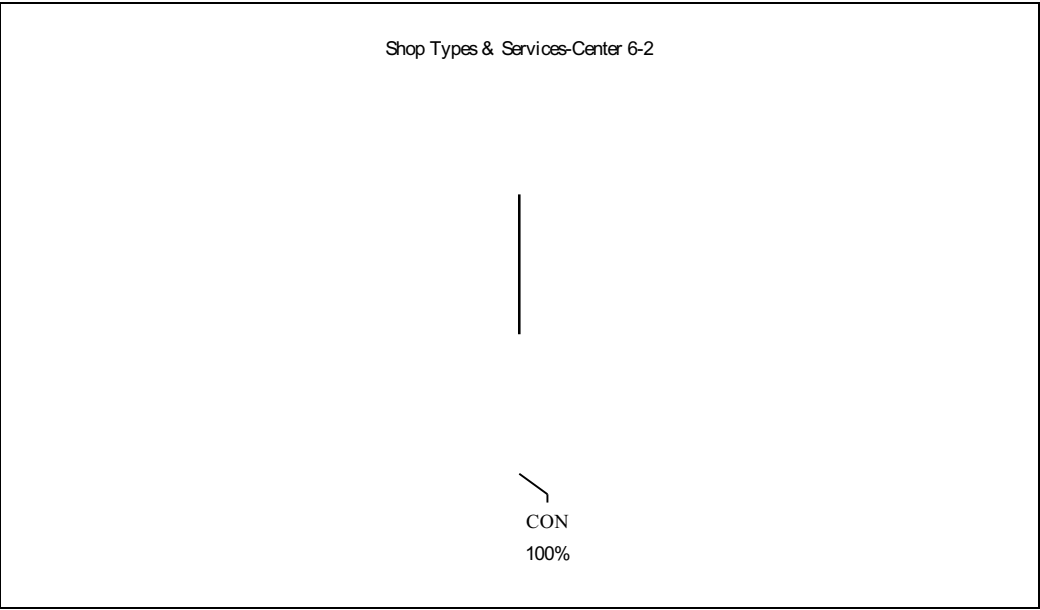
- Shopping Patterns (see appendix for example of questionnaire)

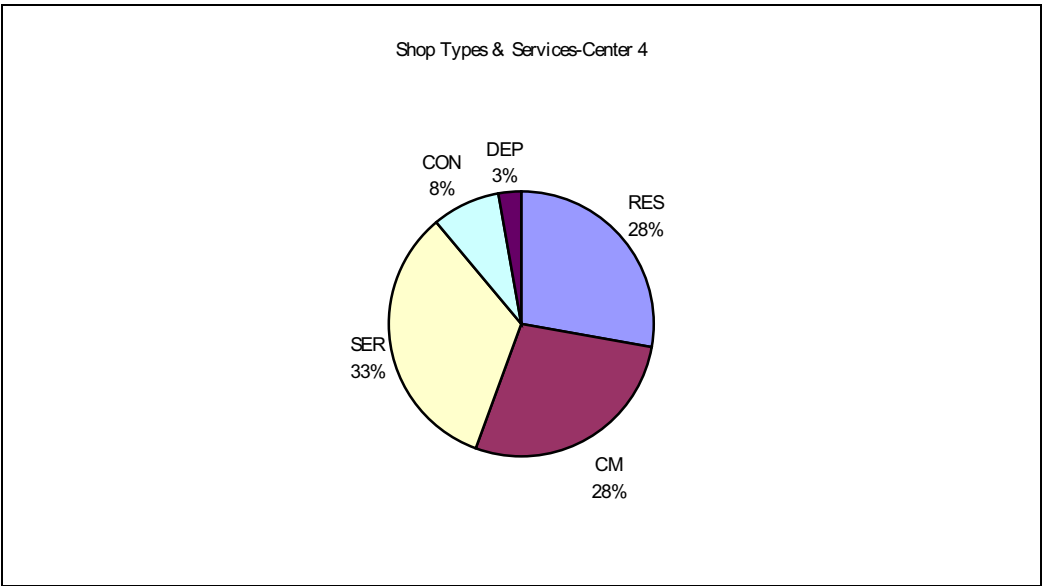
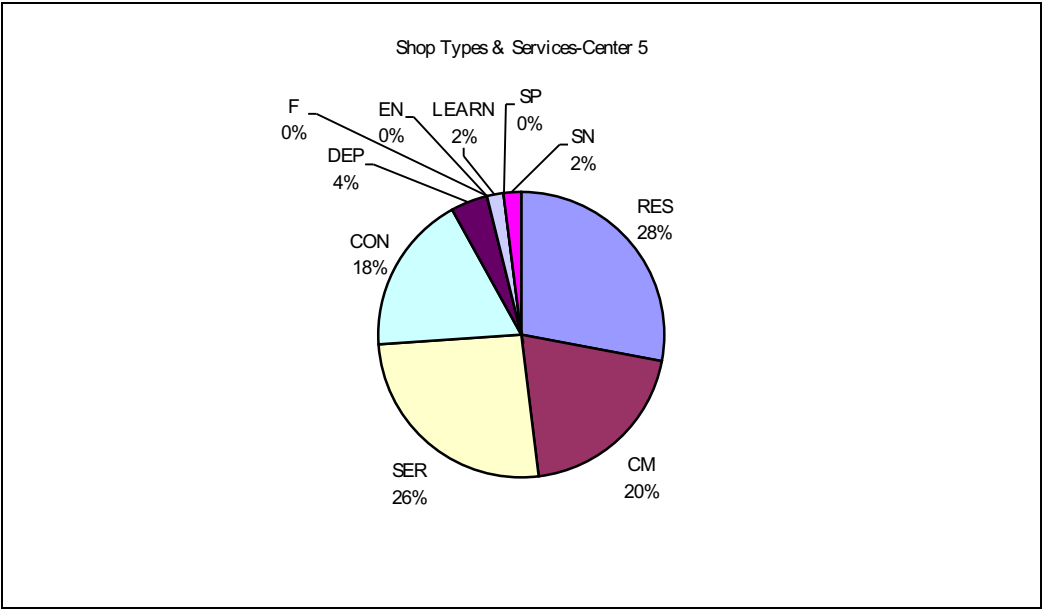
This was done through a survey. Random sampling was used. This is because I was unable to obtain the demography of centers. Also because it was not possible

to determine the area served before carrying out the survey to find the sphere of influence. The target was 50 respondents at each center. This was to have an more accurate result. This was achieved in all centers. At large centers surveys were carried out at sample points so the total was 50. The questionnaire was done during the weekends, and split into morning and afternoon. It was suitable to do this at weekends because more people shop; we would have a cross section of the population. Also more people mean more people are willing to answer. It was split into morning and afternoon because different people may shop at different times for different purposes.

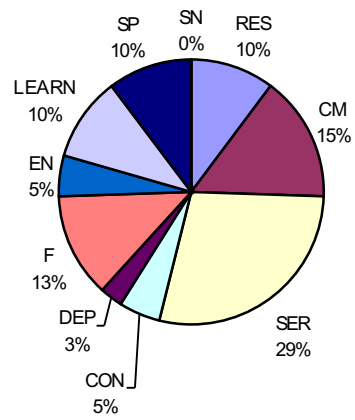
Data Presentation and Analysis

- Shop Types

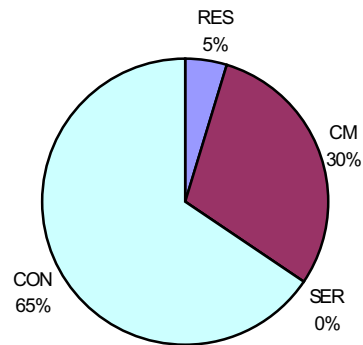


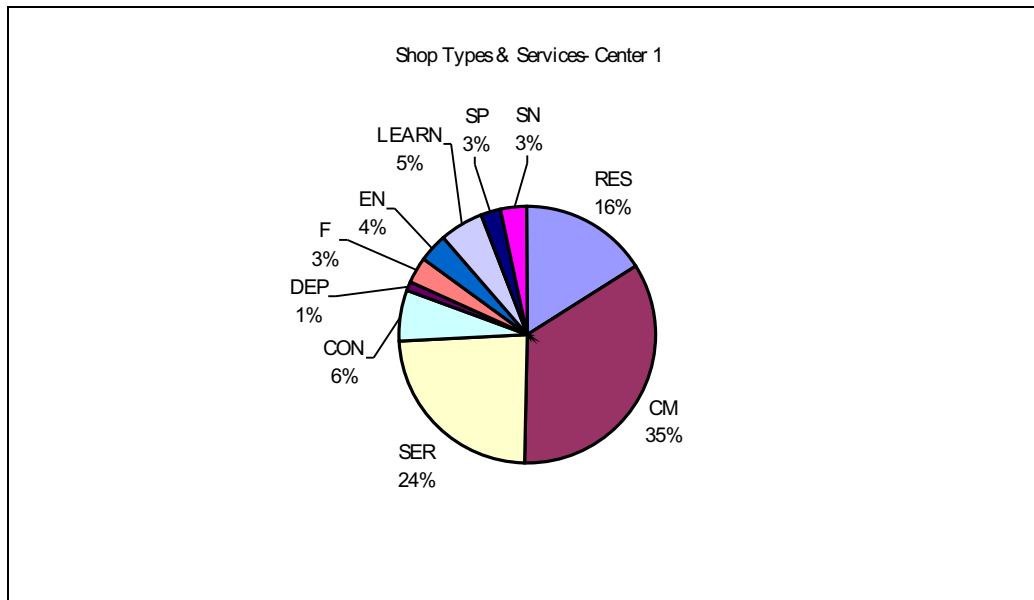


Shop Types & Services-Center 3



Shop Types & Services-Center 2





As a center increase in size, the number of shops and the number of types of shops also increase. This is because large centers have larger sphere of influence, which mean there is a high threshold population. This means the center can support higher order shops, such as those selling electronics and clothes.

The proportion of comparison increase and convenience shops decrease. This is because people travel a short range for convenience stores, because there are more of them, serving a small population. Comparison shops are found higher up in the hierarchy because people are willing to travel larger range for up market goods. More people visit large centers for general shopping.

Services do not change much because people do not want to travel far for it, especially medical services; they need to be available locally. Services provided in larger centers are more up market and expensive, such as beauty parlors.

The proportion of restaurants is largest in the middle. This is because restaurants are considered to be convenient in Taiwan. But it requires higher threshold population than convenience stores, so they are found in this section.

C2 was an anomaly. It is a large shopping center but mostly sells convenience goods rather than comparison goods. This is because it provides good transportation links and parking. The prices are also low. It attracts people who need to do weekly shopping. It may also be because the local high street sells comparison goods, which mean competition.

- Building height (see graph)

The highest buildings are found higher up in the hierarchy. This is because as centers increase in size, it moves towards the center of the district. Because the

center always have the most expensive land price (due to the fact that it is equal distance from everywhere); to take full advantage, buildings are built tall. Comparison shops make enough revenue to cover this cost. Tall buildings also allows department stores to operate and more shops to be opened in larger centers. C6.2 was an anomaly. It had a tall building because this area of the district is the newer part. To meet demand for housing (rising population), flats are built taller. C2 was also an anomaly. It is an large center located in the outskirts. It is located here because it needs to provide parking (most people drive to get here) and land is cheap. It only has 3-5 floors but each floor has an large area. This suits the shop because it sells mostly food; one store sells DIY equipment and another sells food in bulk. Large space is more convenient.

- Traffic and pedestrian flow

- Traffic (see graphs)

The general trend is that, the larger the center, the higher the traffic flow. This is because large centers serve more population. It is also because they are located near centers and many roads converge here. More people travel by vehicles to large centers (which has more transportation links). Also because most people own cars and large centers have parking. Small centers, which are mostly located in residential areas, have lower traffic flow because people travel small range for low order goods. In residential areas the roads are small, which aren't suitable for vehicles.

C2 had lower traffic flow than expected. This may be because of its location. C6.2 had a high traffic flow despite it is only a corner shop. This is because it is located next to a main road, which people commute with. The same applies to C5, it is a small center but has the highest traffic flow. It is located between a high way exit and a round about. Most of the traffic flow was just people passing by.

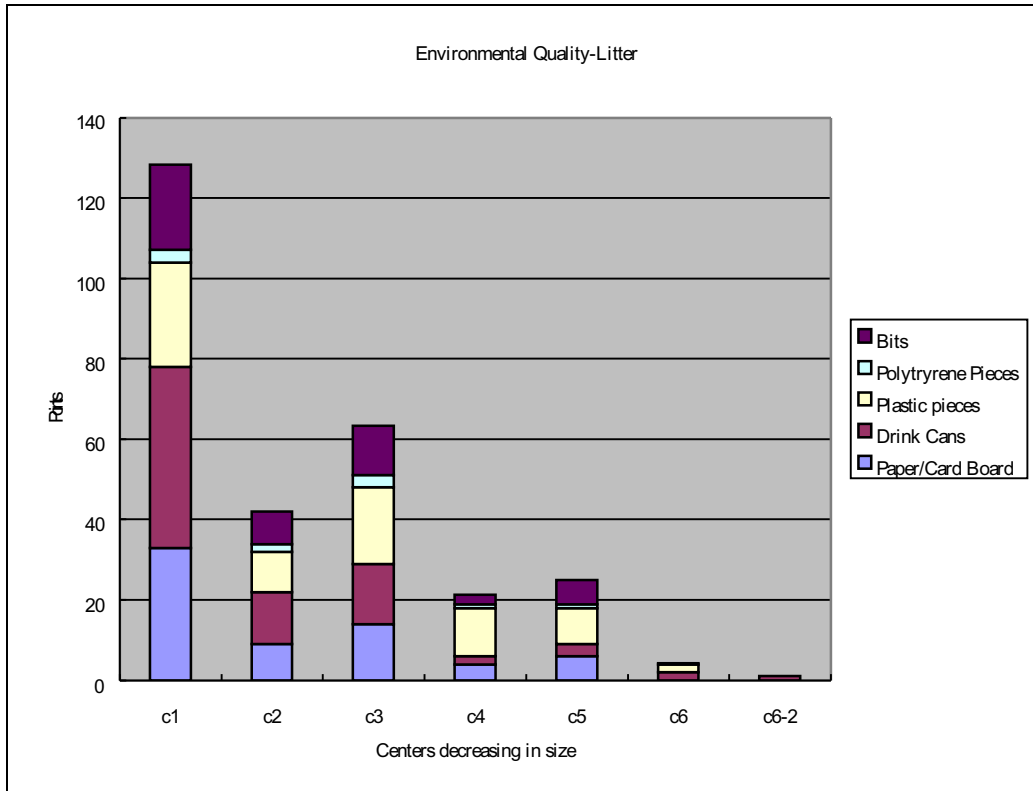
In large centers, there are variations within. However it still follows the patterns. The highest is in the center. This is because it is a nodal point, other roads within large centers have much lower traffic flow, because it provides links to residential areas.

- Pedestrian Flow

Pedestrian flow increases as it goes up the shopping hierarchy. The main reason is because large centers have larger sphere of influence. It attracts more people, most of which visit for general shopping; therefore a high pedestrian flow. This is supported by the fact that people spend more time at large centers. Lower down the hierarchy, pedestrian flow is low because it only serves a small area. Anomalies are C2 and C3. C2 only has 3 superstores, also people have a purpose of buying when they visit, so although it's a large center, the pedestrian flow is

low (it is busy side the shops). C3 is not located near any residential area, so people would not walk here. Therefore it was lower than expected.

- Environmental quality-litter

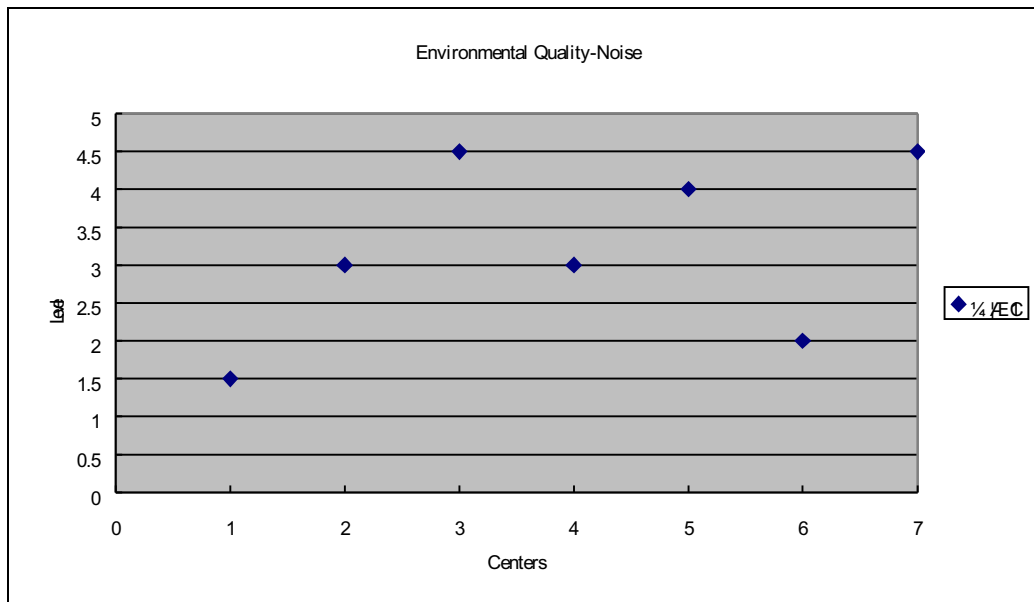


The level of litter worsens as it goes up the hierarchy. There is no strong correlation between the proportion of each type of litter and center size. This trend is because there is higher pedestrian flow at large centers and lack of amenities (bins). This is because the Taiwanese government has encouraged people to recycle rubbish themselves. Litter is significantly serious in C1. This is because it has over 400 shops, many of which are convenience stores selling drinks. A high percentage of people 'shopping around' means they may buy food drinks, and this increases the chance of littering. Smaller centers have a small sphere of influence, and also because they are mostly located in residential areas. This means people would buy goods and consume it at home (which should be nearby). Also, there are bins and recycle centers in the shop or outside. This reduces litter. C2 did not follow the trend. This is because the pedestrian flow is very low and most people shop within the superstores. Because there are only 3 shops, it is easy to manage the environment. A desirable environment to shop is one of the reasons people visit out-of-town shopping centers.

Within large centers, litter varies in different parts (see graph). Because shops cluster, in C1, [] has a high percentage of polystyrene, plastic, and drinks because restaurants/snacks cluster here. For C3, there is a fair distribution of shop types,

causing litter to be more or less even.

- Environmental quality-noise



There is a weak correlation but it shows us the general trend is: as centers increase in size, noise worsens. This is mainly due to traffic flow. Large centers have higher traffic flow which causes noise. High pedestrian flow means chatter and shouting (common when a shop is on sale, a type of promotion from shop) contributes to noise.

There are variations in large centers, but still following the trend. See map.

- Shopping Patterns

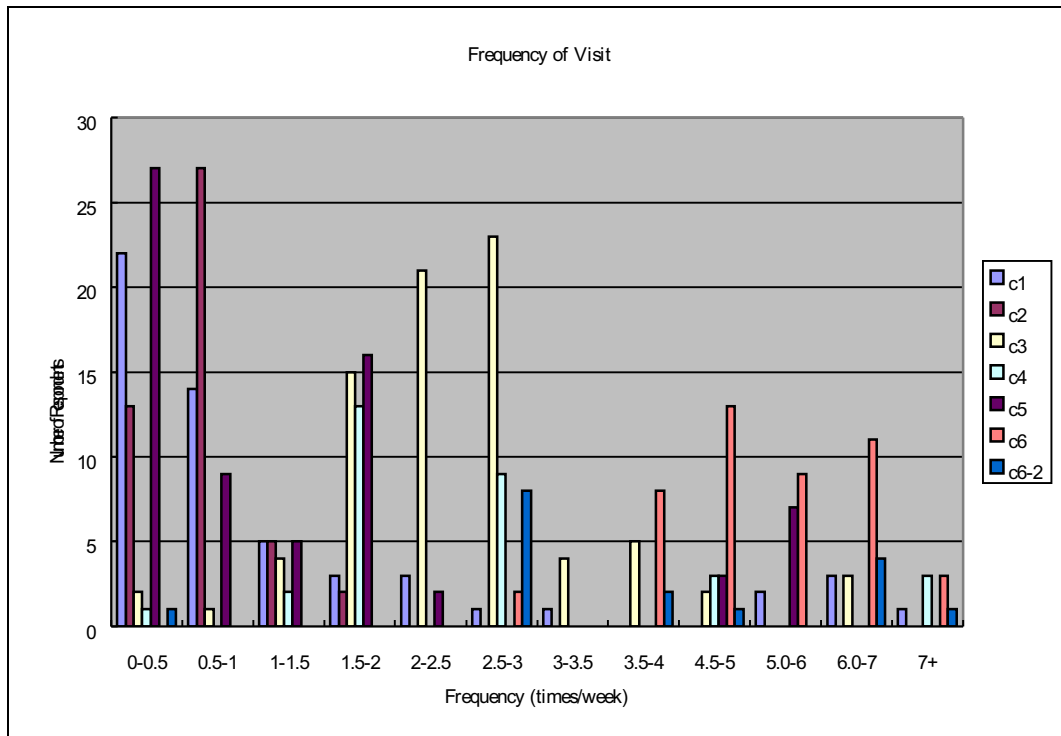
-Sphere of influence (see map)

As you go up the shopping hierarchy, the sphere of influence increases. Ideally Sol's should be circles, but because population is not evenly spread, and also there are obstruction such as mountains, airports and roads, Sol's are distorted. Another fact is that because Nei-Hu is a commuting district, people live in certain areas, this affects the shape of Sol's. Sol's may not indicate the size of population served.

Sol increase due to range. People are willing to travel further for higher order goods, which are located in large centers. This causes there to be less large centers and further apart: each serves a large area. As you go down the hierarchy, there are more centers with smaller soi. This is because they provide more and more convenience goods, which only attract locals. In return, soi affect what can be sold. A large soi usually means large threshold population, which support more higher order shops.

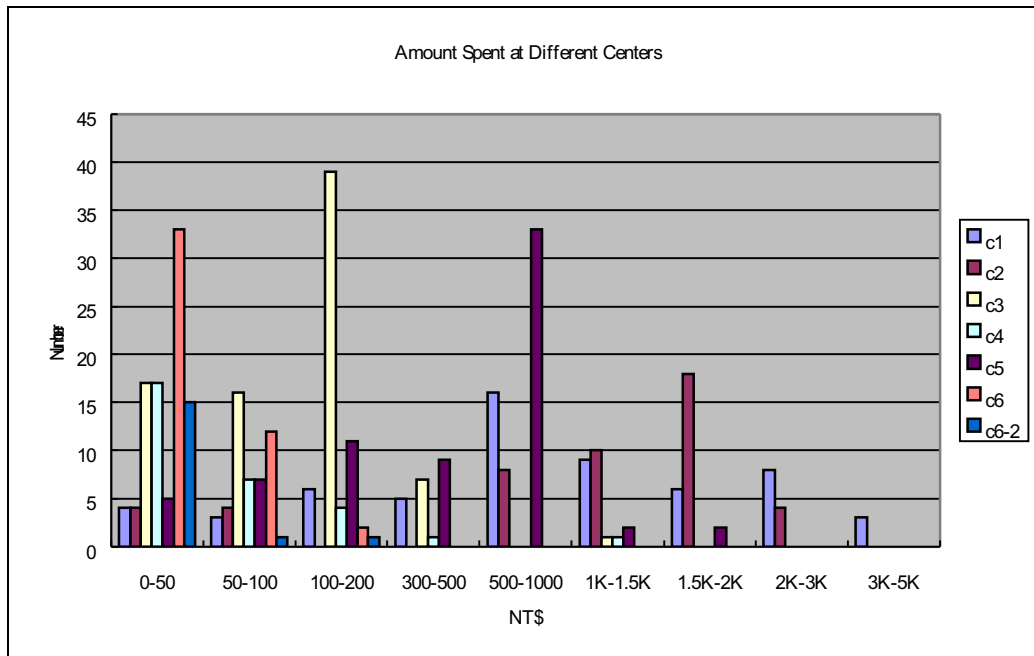
There are 2 anomalies. C2's soi is slightly larger than C1, which was expected to have the largest, because it has the most number of shops and has a high percentage of service and comparison shops. C2 only has 3 superstores and the majority of goods sold are convenience goods. It has gained a large soi because it is attracting people from further. People are attracted because it has good transportation links, it is very accessible and there are parking available. People visit here for weekly shopping for food (which are often cheaper because goods are bought in bulk). The environment is clean. People are also attracted because there is one specialist shop selling DIY goods. The second is C5. it has a large sphere of influence but not population necessary. This is because it is located in the commuting zone, next to the highway. It has a large soi because it provides services, which mostly are car repairs. Shops clustering means people will travel here for its services. The population served by C5 is located towards the edge of its soi.

-Frequency of visit



The larger the center, the lower the frequency of visit. This is because of goods provided at centers. As you go up the hierarchy, the higher order goods become. People buy these goods less frequent, because they are high priced and often they last quite a long time. People visit C2 more frequent than C1, because they need to buy convenience goods on a weekly basis.

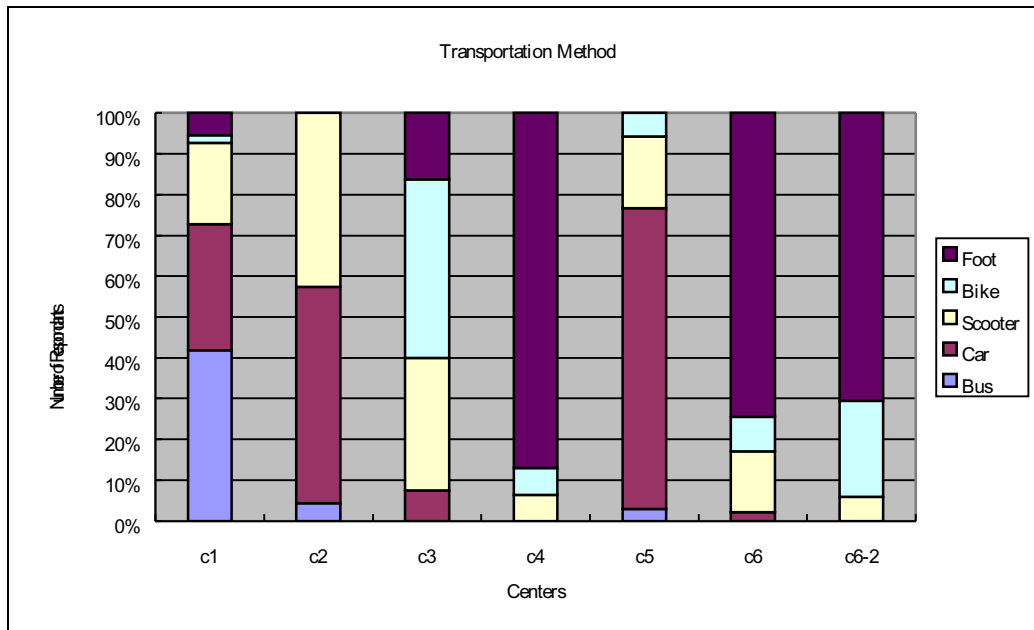
-Money spent



At lower centers, the majority of people spend \$0-50. As you move up the hierarchy, the average amount spent moves up. At C1 the majority spends 500-1K. This is the only center where people spend 3K-5K, this is because C1, as most large centers, is an up-market area. The goods sold are predominantly comparison, which is high priced. But this is different for C2, there are much more people who spend 500-1K. this is because the majority has a purpose of buying when they visit, unlike C1, which relies on impulse buying (people shopping around). At C2, people buy convenience goods in high quantities.

Lower down the hierarchy, because centers like C6.1 and 6.2 sell convenience goods with little choice, people, as shown in 'Purpose of visiting,' buy food (mostly drinks), which are very cheap but bought frequently.

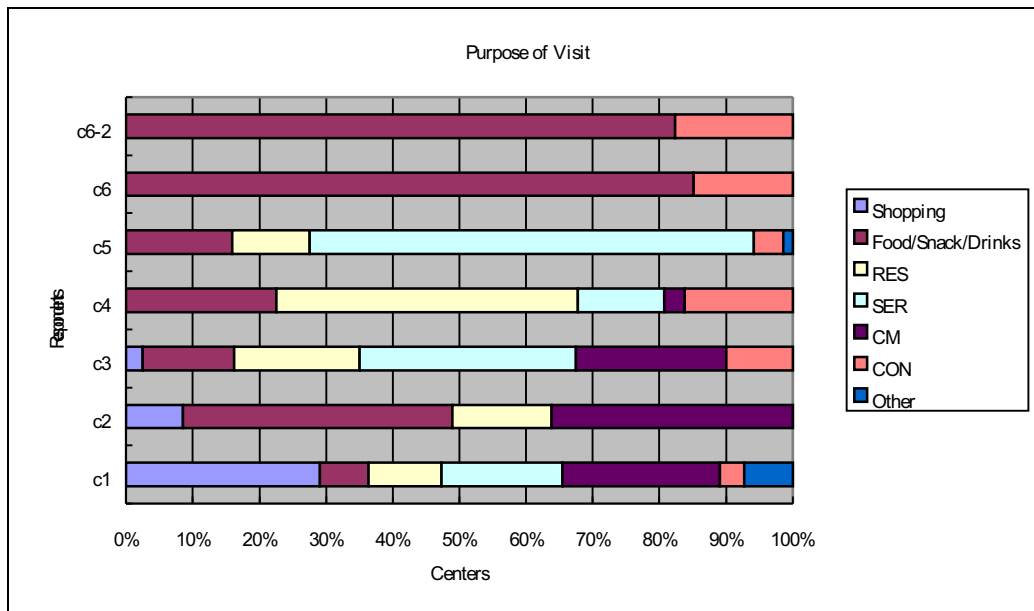
-Transportation Method



Choice of transportation results from sphere of influence. Because SoI are circles, there will be more population as you move outwards. They will affect the majority of choice of transportation (the graph also suggests the population density of its SoI). At smaller centers, most people travel by foot, because the SoI is small, people live within walking distance. There were people traveling by scooter, this was not expected. They were anomalies who were just passing by, this is particularly the case in C6.2, as it is located at the commuting zone. C5 had an unusually high percentage of 'cars.' This has resulted from its location. It has a large SoI, but people do not live near the center. The majority lives on the edge of its SoI, therefore travel by car.

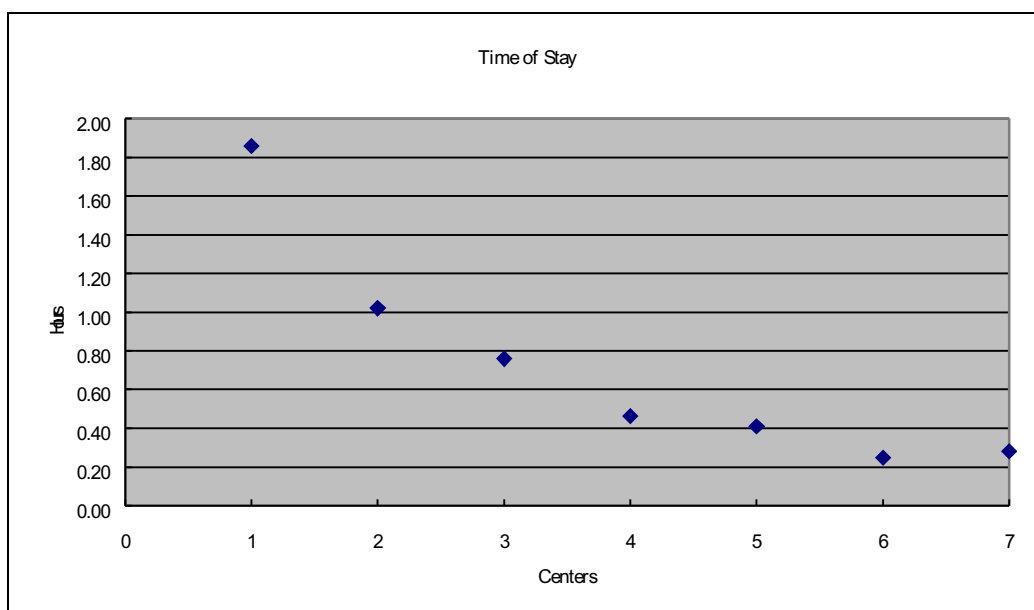
At C1, the majority travels by bus. This is because there are many transportation links converging (serving a large area) at the center. People are put off driving due to congestion (high traffic flow). At C2, most people travel by car. This is because of convenience. There are large parking spaces available. It is next to main roads linking with other districts. Also because people 'need' to drive to transport the large amount of goods bought.

-Purpose of Visiting



Purpose of shopping is largely affected by the type and number of shops. Corner shops largely sell convenience goods, resulting in over 80% of respondents buying food or drinks. C5 does not follow the pattern, this is because a high percentage of shops here provide service (car repairs, this is the main reason it is located here, it needs space). At the higher end, there begins to have 'shopping.' This is because at larger centers there are more shops and more types of shops. At C1, there are many comparison shops, which cause people to compare goods, hence shopping.

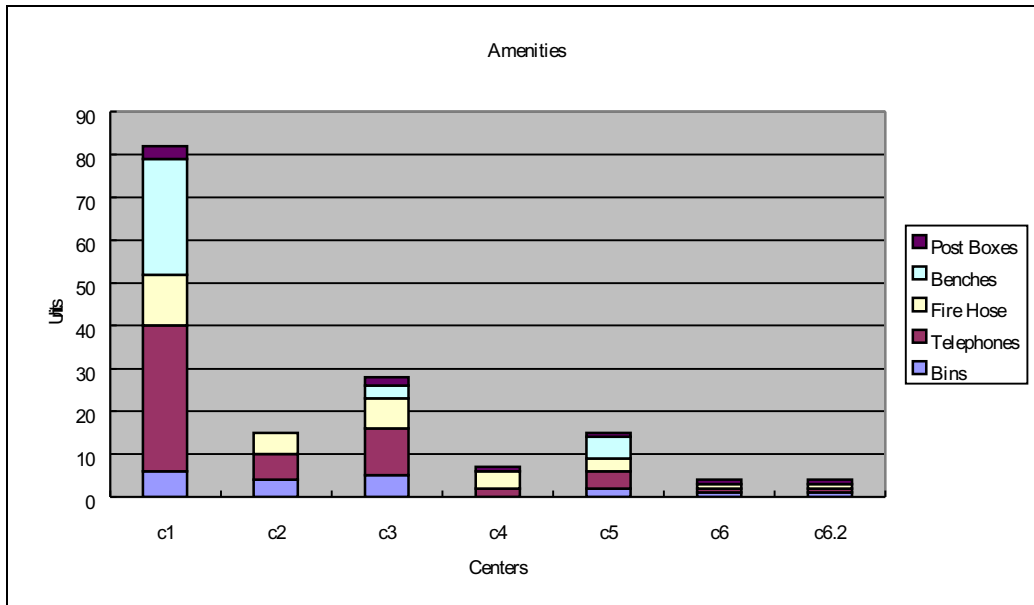
-Time Spent



People spend more time at larger centers. This is mainly resulted from 'purpose.' As you move down the hierarchy, People have more purpose: they know what to buy.

This is especially the case for convenient goods, where comparison is not needed. This cause people to spend less time at smaller centers. At large centers, more people ‘shop around,’ causing them to spend a long time there.

- Amenities



there is no variation between the type of amenities and size of centers. The important change is the number of them. At large centers, there are over 80 amenities and at corner shops only 4. this has resulted from the population served. The more people visits a center, the more amenities will be required to meet those needs. At C1, the number of telephones were lower than expected, this is due to the increasing popularity of mobile phones. C2 doesn't follow the pattern because it consists of superstores, which provide its own amenities. There are less because people only shop here, also because people do not spend long buying, so there may not be a great need.

Conclusion

From the investigation and analysis, I found that as the size of centers change, so does it characteristics. I found the following changes:

- Shop Types
As centers' size increase, the number and type of shops also increase. Percentage of low order shops (convenient, restaurants) decrease while higher order shops increase.
- Building heights
As center increase in size, it is more likely to be located near the CBD, where land prices are high. Therefore buildings are built tall to take full advantage.
- Environmental quality-litter
The amount of litter increases with size of centers.
- Environmental quality-noise
The level of noise increases with size of centers. At large centers it can be considered pollution.
- Traffic flow and pedestrian flow
In general these increase with size of centers. However traffic flow can be affected by the location of the center.
- Shopping Patterns
 - Sphere of Influence
SoI increases with size of centers. In reality SoI's shapes are not circles, they are distorted by certain factors.
 - Frequency of Visit
As centers increase in size, people will visit less frequent.
 - Money Spent
People spend more money at large centers due to impulse buying of comparison goods. At smaller centers people buy convenience good which are cheap.
 - Transportation Method
As you move up the shopping hierarchy, more people travel by vehicles. This has resulted from larger SoI, where people live further away.
 - Purpose
as centers increase in size, people who visit have less purpose, resulting in people to shop around. Also more people shop for comparison goods as oppose to convenient goods in small centers. This is due to people less willing to travel a large range for low order goods.
 - Time of Stay
People spend less time in small centers because they know what to buy, and don't spend time comparing goods.

It is found that many of these factors are interlinked and affect each other. See diagram.

It is found that C2, an out of town shopping center, does not follow many of the patterns. It is a large center but provides mostly convenient goods. It has a large sphere of influence because people are attracted from far away. This is because of high environmental quality and good transportation links. C2 also has specialized superstores which people are willing to travel far to get to. People also visit it more frequent than high streets. This is because people visit for needs, which are mostly food. These are use up quickly and need to be replaced.

Evaluation

There are limitations which may have affected the validity of results. This investigation relied heavily upon the survey. Random sampling may have resulted in results not representing the population. The number of respondents were not enough to be statistically correct. This may have affected the accuracy of Sol's. Also because most people who are willing to answer were young people. This may have caused results of other questions to be biased. E.g. young people like to shop more, they can have less spending power...etc. it may have affected the results of 'purpose.'

Another major limitation is the time. Because it was carried out during the summer, there may be a higher percentage of students. This means more people may visit centers, increasing the traffic and pedestrian flow. More people also means environmental quality may've been worsened.

Traffic and pedestrian flow were collected near rush hour, this may have risen the levels, and not represent the average.

Different people visit centers at different times for different purposes. The survey was only carried out twice during the day. There may be other shopping patterns not revealed (and may've explained the current patterns better).